

Investigation of the long-term course of patients with amnesic mild cognitive impairment (MCI) or Alzheimer's disease (AD) using cerebral amyloid positron emission tomography (PET) with ^{18}F -AV-45

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Abstract

[Purpose] Standardized uptake value ratio (SUVR) was measured using florbetapir (^{18}F -AV-45) in patients with Alzheimer's disease (AD) or amnesic mild cognitive impairment (MCI), and the association between SUVRs and clinical diagnosis after a 3-year follow-up was investigated.

[Methods] AD was diagnosed using the Diagnostic and Statistical Manual of Mental Disorders IV (DSM-IV) and National Institute on Aging-Alzheimer's Association (NIA-AA), and amnesic MCI was diagnosed using the diagnostic criteria of Peterson et al. (Peterson RC. Mild cognitive impairment as a diagnostic entity. *J Intern Med.* 2004 ;256(3):183-194). Subjects were patients who could be followed-up for at least 3 years from among 28 AD patients and 14 amnesic MCI patients in whom SUVR was measured using ^{18}F -AV45 between October 2010 and February 2015. The association between SUVRs at PET and clinical diagnosis 3 years later was examined.

[Results] Twenty-six of the 28 AD patients and all 14 of the amnesic MCI patients could be followed-up. The patient with the lowest SUVR among the AD patients later fulfilled the diagnostic criteria for dementia with Lewy bodies. One patient diagnosed with early AD who had high SUVR was later diagnosed with MCI after environmental modification and other measures. The remaining 24 AD patients retained the same diagnosis of AD. Six of the 14 MCI patients transitioned to AD, and 4 retained the same diagnosis of MCI. Memory normalized in 4 of the MCI patients, 2 of whom showed high SUVRs.

[Discussion] Amyloid PET with ^{18}F -AV-45 is an excellent biomarker in AD, but MCI does not parallel SUVR and patients with MCI were found to be a heterogeneous group.